

# Conversion Factors

## Geometric Formulae

### Circle

Area =  $\pi r^2$  or  $\pi D^2 / 4$

Circumference =  $\pi D$  or  $2\pi r$

(r = radius, D = diameter,  $\pi = 3.1429$ )



### Sphere

Surface Area =  $4\pi r^2$  or  $\pi D^2$

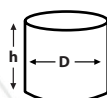
Volume =  $4/3\pi r^3 = 1/6\pi D^3 = D^3 \times 0.5238$



### Cylinder

Volume =  $\pi r^2 h$

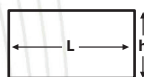
(h = height)



### Rectangle or Square

Area = L x h

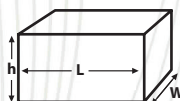
(L = Length) (h = height)



### Box

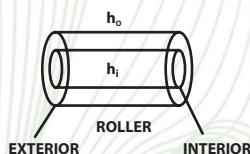
Volume = L x W x h

(L = Length) (W = width) (h = height)



### Roller

(Volume Outer) - (Volume Inner) =  $(\pi r_o^2 h_o) - (\pi r_i^2 h_i)$



### Volume to Mass Calculation

Mass = density x volume

### Thickness

1 mil = 25.4 microns = 0.0254 mm

1 mm = 40 mils = 1000 microns

### Area

1 m<sup>2</sup> = 10.76 ft<sup>2</sup>

1 ft<sup>2</sup> = 0.093 m<sup>2</sup>

### Length

1 m = 3.28 feet

1 cm = 0.4 inches

1 foot = 0.305 m

1 inch = 2.54 cm

### Physical Properties

1 kN/m = 5.71 pli

1 N/mm<sup>2</sup> = 145 psi = 1 MPa

### Weight

1 kg = 2.2 lb

1 lb = 0.454 kg

### Volume

1 US Gallon = 3.78 Litres

4 US Gallon = 15.14 Litres

44 US Gallon = 166.6 Litres

55 US Gallon = 208.2 Litres

### Temperatures

°C = 5/9 x (°F - 32)

°F = (9/5 x °C) + 32

### Pressures

100 kPa = 0.1 MPa = 14.5 psi = 1 bar

### Density

1 g/L = 0.062 lb/ft<sup>3</sup>

1 lb/ft<sup>2</sup> = 4.88 kg/m<sup>2</sup>

1 ft<sup>3</sup> = 0.028 m<sup>3</sup>

1 kg/m<sup>3</sup> = 0.0624 lb/ft<sup>3</sup>

## Approximate Viscosities of Common Materials

### Material Viscosity in Centipoise

Water 1 cps	SAE 20 Motor Oil 140 – 420 cps	Castor Oil 1,000 cps	Chocolate Syrup 25,000 cps	Sour Cream 100,000 cps
Milk 3 cps	SAE 30 Motor Oil 420 – 650 cps	Karo Syrup 5,000 cps	Ketchup 50,000 cps	Peanut Butter 250,000 cps
SAE 10 Motor Oil 85 – 140 cps	SAE 40 Motor Oil 650 – 900 cps	Honey 10,000 cps	Mustard 70,000 cps	